

### AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated below. The language being added is underlined ("\_\_\_") and the language being deleted contains either a strikethrough ("——") or is enclosed by double brackets ("[[ ]]").

1. (Currently Amended) A method for implementing smart digital subscriber line (DSL) for long reach digital subscriber line (LDSL) systems, the method comprising:  
selecting a spectral mask by one of a central office and customer premise equipment (CPE) based upon performance criteria, wherein selecting a spectral mask further comprises selecting a spectral mask from a number of upstream masks (U1, U2, U3,...,Un) and a number of downstream masks (D1, D2, D3,..., Dn), wherein one of the number of upstream masks is defined by the following relations, wherein  $f$  is a frequency band in kHz and U1 is the value of the mask in dBm/Hz:

for  $0 < f \leq 4$ , then  $U1 = -97.5$ , with max power in the in 0-4 kHz band of +15 dBm;

for  $4 < f \leq 25.875$ , then  $U1 = -92.5 + 23.43 \times \log_2(f/4)$ ;

for  $25.875 < f \leq 60.375$ , then  $U1 = -29.0$ ;

for  $60.375 < f \leq 90.5$ , then  $U1 = -34.5 - 95 \times \log_2(f/60.375)$ ;

for  $90.5 < f \leq 1221$ , then  $U1 = -90$ ;

for  $1221 < f \leq 1630$ , then  $U1 = -99.5$  peak, with max power in the  $[f, f + 1 \text{ MHz}]$

window of  $(-90 - 48 \times \log_2(f/1221) + 60)$  dBm; and

for  $1630 < f \leq 11040$ , then  $U1 = -99.5$  peak, with max power in the  $[f, f + 1 \text{ MHz}]$  window of -50 dBm; and

activating the selected spectral mask based on at least one of customer premise or central office capabilities.

2. (Original) The method of claim 1 wherein selecting the spectral mask is performed manually.

3. (Original) The method of claim 1 wherein selecting the spectral mask is performed automatically.

4. (Currently Amended) The method of claim 3 wherein automatic selection of [[a]] the spectral mask is performed by line probing.

5. (Currently Amended) The method of claim 3 wherein automatic selection of [[a]] the spectral mask is performed by a many tests procedure performed during a training period.

6. (Original) The method of claim 1 wherein activating the selected spectral mask is accomplished by a customer premises equipment decision.

7. (Original) The method of claim 1 wherein activating the selected spectral mask is accomplished by a central office decision.

8. (Original) The method of claim 1 wherein activating the selected spectral mask is accomplished by a central office decision that overrules a customer premises decision.

9.-10. (Canceled)

11. (Currently Amended) The method of claim [[9]]1 wherein one of the number of downstream masks is defined by the following relations, wherein  $f$  is a frequency band in kHz and  $D1$  is the value of the mask in dBm/Hz:

for  $0 < f \leq 4$ , then  $D1 = -97.5$ , with max power in the 0-4 kHz band of +15 dBm;

for  $4 < f \leq 25.875$ , then  $D1 = -92.5 + 20.79 \times \log_2(f/4)$ ;

for  $25.875 < f \leq 81$ , then  $D1 = -36.5$ ;

for  $81 < f \leq 92.1$ , then  $D1 = -36.5 - 70 \times \log_2(f/81)$ ;

for  $92.1 < f \leq 121.4$ , then  $D1 = -49.5$ ;

for  $121.4 < f \leq 138$ , then  $D1 = -49.5 + 70 \times \log_2(f/121.4)$ ;

for  $138 < f \leq 353.625$ , then  $D1 = -36.5 + 0.0139 \times (f - 138)$ ;

for  $353.625 < f \leq 569.25$ , then  $D1 = -33.5$ ;

for  $569.25 < f \leq 1622.5$ , then  $D1 = -33.5 - 36 \times \log_2(f/569.25)$ ;

for  $1622.5 < f \leq 3093$ , then  $D1 = -90$ ;

for  $3093 < f \leq 4545$ , then  $D1 = -90$  peak, with maximum power in the  $[f, f+1]$  MHz window of  $(-36.5 - 36 \times \log_2(f/1104) + 60)$  dBm; and

for  $4545 < f \leq 11040$ , then  $D1 = -90$  peak, with maximum power in the  $[f, f+1]$

MHz] window of -50 dBm.

12. (Currently Amended) The method of claim [[9]]1 wherein one of the number of upstream masks is defined by the following relations, wherein  $f$  is a frequency band in kHz and  $U_2$  is the value of the mask in dBm/Hz:

for  $0 < f \leq 4$ , then  $U_2 = -97.5$ , with max power in the in 0-4 kHz band of +15 dBm;

for  $4 < f \leq 25.875$ , then  $U_2 = -92.5 - 22.5 \times \log_2(f/4)$ ;

for  $25.875 < f \leq 86.25$ , then  $U_2 = -30.9$ ;

for  $86.25 < f \leq 138.6$ , then  $U_2 = -34.5 - 95 \times \log_2(f/86.25)$ ;

for  $138.6 < f \leq 1221$ , then  $U_2 = -99.5$ ;

for  $1221 < f \leq 1630$ , then  $U_2 = -99.5$  peak, with max power in the  $[f, f + 1$  MHz]

window of  $(-90 - 48 \times \log_2(f/1221) + 60)$  dBm; and

for  $1630 < f \leq 11040$ , then  $U_2 = -99.5$  peak, with max power in the  $[f, f + 1$  MHz] window of -50 dBm.

13. (Currently Amended) The method of claim [[9]]1 wherein one of the number of downstream masks is defined by the following peak values, wherein  $f$  is a frequency in kHz and D2 is the peak value of the mask in dBm/Hz:

for  $f = 0.0$ , then  $D2 = -98.0$ ;

for  $f = 3.99$ , then  $D2 = -98.00$ ;

for  $f = 4.0$ , then  $D2 = -92.5$ ;

for  $f = 80.0$ , then  $D2 = -72.5$ ;

for  $f = 120.74$ , then  $D2 = -47.50$ ;

for  $f = 120.75$ , then  $D2 = -37.80$ ;

for  $f = 138.0$ , then  $D2 = -36.8$ ;

for  $f = 276.0$ , then  $D2 = -33.5$ ;

for  $f = 677.0625$ , then  $D2 = -33.5$ ;

for  $f = 956.0$ , then  $D2 = -62.0$ ;

for  $f = 1800.0$ , then  $D2 = -62.0$ ;

for  $f = 2290.0$ , then  $D2 = -90.0$ ;

for  $f = 3093.0$ , then  $D2 = -90.0$ ;

for  $f = 4545.0$ , then  $D2 = -110.0$ ; and

for  $f = 12000.0$ , then  $D2 = -110.0$ .

14. (Currently Amended) The method of claim [[9]]1 wherein one of the number of upstream masks is defined by the following peak values, wherein  $f$  is a frequency in kHz and  $U3$  is the peak value of the mask in dBm/Hz:

for  $f = 0$ , then  $U3 = -101.5$ ;

for  $f = 4$ , then  $U3 = -101.5$ ;

for  $f = 4$ , then  $U3 = -96$ ;

for  $f = 25.875$ , then  $U3 = -36.30$ ;

for  $f = 103.5$ , then  $U3 = -36.30$ ;

for  $f = 164.1$ , then  $U3 = -99.5$ ;

for  $f = 1221$ , then  $U3 = -99.5$ ;

for  $f = 1630$ , then  $U3 = -113.5$ ; and

for  $f = 12000$ , then  $U3 = -113.5$ .

15. (Currently Amended) The method of claim [[9]]1 wherein one of the number of downstream masks is defined by the following peak values, wherein  $f$  is a frequency in kHz and D3 is the peak value of the mask in dBm/Hz:

for  $f = 0$ , then  $D3 = -101.5$ ;

for  $f = 4$ , then  $D3 = -101.5$ ;

for  $f = 4$ , then  $D3 = -96$ ;

for  $f = 80$ , then  $D3 = -76$ ;

for  $f = 138$ , then  $D3 = -47.5$ ;

for  $f = 138$ , then  $D3 = -40$ ;

for  $f = 276$ , then  $D3 = -37$ ;

for  $f = 552$ , then  $D3 = -37$ ;

for  $f = 956$ , then  $D3 = -65.5$ ;

for  $f = 1800$ , then  $D3 = -65.5$ ;

for  $f = 2290$ , then  $D3 = -93.5$ ;

for  $f = 3093$ , then  $D3 = -93.5$ ;

for  $f = 4545$ , then  $D3 = -113.5$ ; and

for  $f = 12000$ , then  $D3 = -113.5$ .

16. (New) A system comprising:

means for selecting a spectral mask according to performance criteria,  
wherein means for selecting a spectral mask further comprises means for selecting a spectral mask from among a plurality of upstream masks, wherein one of the plurality of upstream masks is defined by the following:

for  $0 < f \leq 4$ , then  $U1 = -97.5$ , with max power in the in 0-4 kHz band  
of +15 dBm;

for  $4 < f \leq 25.875$ , then  $U1 = -92.5 + 23.43 \times \log_2(f/4)$ ;

for  $25.875 < f \leq 60.375$ , then  $U1 = -29.0$ ;

for  $60.375 < f \leq 90.5$ , then  $U1 = -34.5 - 95 \times \log_2(f/60.375)$ ;

for  $90.5 < f \leq 1221$ , then  $U1 = -90$ ;

for  $1221 < f \leq 1630$ , then  $U1 = -99.5$  peak, with max power in the  $[f, f + 1 \text{ MHz}]$

window of  $(-90 - 48 \times \log_2(f/1221) + 60)$  dBm; and

for  $1630 < f \leq 11040$ , then  $U1 = -99.5$  peak, with max power in the  $[f, f + 1 \text{ MHz}]$  window of -50 dBm,

wherein  $f$  is a frequency band in kHz and  $U1$  is the value of the spectral mask  
in dBm/Hz; and

means for activating the selected spectral mask.